From: PETERSON Jenn L [Jenn.L.Peterson@state.or.us]
Sent: Thursday, June 01, 2006 9:38 PM
To: LEVINE Ann; ANDERSON Michael R
Cc: POULSEN Mike; PETERSON Jenn L
Subject: RE: CTL Info

Hi,

I had some comments on the CTL derivation. I know we are close to press time, and want to get this stuff out, but I think some of the concepts are important in that they may set precedent for other efforts to develop CTLs in the region. I don't know if we gave them some of this direction since I was not involved in the objectives development for the work.

1. **SSD Methodology:** I know our final tables only retained the SSDs developed for selenium and dioxin. These issues may be the most relevant if the SSD methodology for these two chemicals results in a CTL that is higher than the AWQC . I have not been able to look at the data to see how some of these comments would change the results (or if they would). The biggest problem right now with developing SSDs is that when you compile the literature you get that don't match up (e.g. how endpoint is calculated, exposure duration). Right now there are not standard methods for reporting tissue residue effects. Hopefully very soon there will be a consistent measure of reporting so that data results are more easily comparable, and can be used more readily in statistical analysis such as the development of SSDs. Until then, we should be considering some of the issues below to make our analysis the most relevant.

Application of Threatened and Endangered Species: The whole concept that we will only be protecting 95% of the fish species may be an issue if there is a T&E species (or surrogate) is the most sensitive. There is nothing to say that T&E species will be more sensitive than other species in the distribution, but if this is the case for a contaminant, we should look that the development of the SSD to ensure it is protective of T&E species. That said, it looks like the species used for at least the dioxin assessment is appropriate (brook trout, Coho salmon, lake trout and rainbow trout were used), but it is something we need to keep in mind in case an agency raises the question.

NOER / LOER Pairs: Restricting the calculation of SSD to NOER / LOER pairs seems overly restrictive. Their criteria dictate that these pairs also must come from the same study, which greatly limits the data used. This is not a requirement of other criteria development methodologies. This puts too much emphasis on one study - something we are trying to avoid by looking at SSDs.

Adding Additional Endpoints: Other endpoints besides growth, reproduction and mortality should have been included - esp. behavioral endpoints. This endpoint should have been included in the ecologically relevant datasets.

Equilibrium Concentrations: We should not require that equilibrium concentrations in tissues should be reached before included the paper in the toxicity database, as toxicity can be elicited before equilibrium is reached.

Significance of Residue above Control: I would add a criteria that in conjunction with a demonstrable dose-response relationship (that they have listed), that the residue eliciting the effect should also be statistically significantly elevated above the control residue.

Choice of Distribution: Their choice of a logistic model (actually they chose a log-logistic model) to fit the SSD may not yield the best fit of the data, which will result in different values being calculated of the 5th percentile (or any percentile for that matter) compared to models that may fit the SSD better than will the log-logistic model. The use of different distributions can alter the final calculation of the SSD greatly. EPA ran

into this issue while working on the ESA consultation for Oregon's water quality criteria. EPA guidance recommends fitting a triangular distribution to toxicity data to estimate the 5th percentile for criteria derivation. However, when this was tried on a handful of chemicals during the early stages of the Oregon ESA consultation by EPA, they found that the triangular distribution was not the best fit for any of the data sets tried. Indeed, there was no one distribution that consistently had the best fit to the data, a conclusion also found by Newman et al. (2000) and Wheeler et al. (2002). Wheeler also gives some guidelines for selecting data of appropriate quality for use in SSD derivation. Turns out that depending on the distribution used to fit toxicity data for Oregon, 5th percentile estimates differed for a single data set by a factor of up to 3x, which obviously affects the definition of a criterion or standard derived from an SSD.A number of distributions have been proposed to fit SSDs, including lognormal, logistic, log-logistic, Weibull, Burr, triangular, probit and logit. The best approach to fitting SSDs may be to first identify which distribution best fits a given data set, and then use that distribution to estimate the 5th percentile of the SSD. I am attaching two papers on the topic by Wheeler and Newman.

Different Life stages Used: For many it looks like effects data from different life stages was used in the calculation of the SSDs (e.g. eggs, larvae, adult). Preferably, the same life stage would be used. Of course, if there is not enough data to do so you need to combine life stages. If that is the case, however, the representatives used in the distribution become very important.

2. AWQC x BCF Development:

BCF Selection: What was the source of the BCFs used here? I do not see where they cite the source for these values, but clearly appropriate selection is integral in good criteria in this case. I feel much more comfortable using the values Shepard cites in his papers (I sent the spreadsheets out a long time ago), since these were pulled from the back end of the water quality criteria development by EPA, and the Superfund Public Heath Evaluation document (which summarized BCFs used in AWQC development). In my opinion they should be the same unless we have a good reason to use something else. I am including the spreadsheet again for comparison.

AWQC Selection: It is not clear here, but I wanted to make sure that they used chronic and most appropriate AWQCs in the development of CTLs. Also, there are some Oregon AWQCs we should be using - at least until they are officially consulted on and approved by EPA. I am not sure of the different lists, but I know EPA will not be consulting on mercury, PCBs or DDT.

-Jennifer

<<PRETRVTable1.xls>> -----Origina <<Newman et al 2000.pdf>> l Message----- <<Wheeler et al 2002.pdf>>

From: LEVINE Ann

Sent: Wednesday, May 24, 2006 4:45 PM

To: ANDERSON Michael R; PETERSON Jenn L

Cc: POULSEN Mike

Subject: RE: CTL Info

<< Message: Fish Tissue Memorandum Attachments >> << Message: Fish Tissue - SSD Deliverable >>

Ann

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The NW Brownfields Newsletter

-----Original Message-----
From: ANDERSON Michael R
Sent: Wednesday, May 24, 2006 4:41 PM
To: PETERSON Jenn L
Cc: LEVINE Ann
Subject: RE: CTL Info

I don't have the SSD spreadsheets. If Ann has them maybe she can forward a copy to you.

-----Original Message-----
From: PETERSON Jenn L
Sent: Wednesday, May 24, 2006 3:55 PM
To: ANDERSON Michael R
Subject: RE: CTL Info

Thanks Mike. On Page 3 of the memo under "Tissue Screening Levels - SSD Method" they reference some spreadsheets for the SSD calculations that were provided. Could you send those along as well?

-Jennifer

-----Original Message-----
From: ANDERSON Michael R
Sent: Wednesday, May 24, 2006 3:45 PM
To: POULSEN Mike; PETERSON Jenn L
Subject: CTL Info

Here are the memo and data table for the CTLs.

<< File: 278702700M3.doc >> << File: 278702700T1 & T2 SSD Database Summary.xls >>